(located in perinephric fat), ureteric, adrenovolumbar, paravertebral, hemiazygous, gonadal, lumbar and inferior phrenic veins.

The high association of this finding with tumor invasion is a valuable preoperative sign that should alert the radiologist and urologist not only to the presence of renal vein invasion but also to the size and number of vessels that may be encountered at operation.

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New Techniques in Pulmonary Angiography

In spite of recent advances in pulmonary scanning, pulmonary angiography is still an important and, indeed, the most reliable diagnostic test for delineating pulmonary thromboembolism. New techniques have been devised to both facilitate and improve the quality of the study.

A percutaneous right femoral vein approach allows rapid catheterization reliably permitting use of catheters of a more suitable size than may be possible through the more conventional approach by venous cutdown on the anticubital fossa. A small reverse curve to the distal tip combined with a pigtail facilitates the procedure even further as well as enhancing its safety.

Another technique worthy of note is segmental pulmonary arteriography which has its greatest value in chronic recurrent pulmonary embolism. Segments of the lungs are selectively catheterized and injected with contrast medium using very fine detail technique allowing demonstration of old residual of embolic disease.

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Ranniger K: Pulmonary arteriography: A simple method for demonstration of clinically significant pulmonary emboli. Am J Roentgenol Radium Ther Nucl Med 106:558-562, Jul 1969

Transfemoral Selective Coronary Arteriography

Selective coronary arteriography may be accomplished safely by way of a percutaneous transfemoral approach utilizing specially designed preformed catheters. These catheters are designed to seek out the coronary ostia without the necessity of the extensive manipulations required in the more established Sones technique which involves a flexible catheter passed by way of the brachial artery. Because of the somewhat greater selectivity permitted by the various femoral techniques, improved detail of filming can be obtained which is so important for proper patient selection for the recently developed saphenous vein aorto-coronary bypass procedures.

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Sones FM Jr, Shirey EK: Cine coronary arteriography. Mod Concepts Cardiovasc Dis 31:735-738, 1962

Wilson WJ, Lee GB, Amplatz K: Biplane selective coronary arteriography via percutaneous transfemoral approach. Am J Roentgenol Radium Ther Nucl Med 100:332-340, June 1967

Selective Arterial Infusions of Vasoconstricting Agents in the Control of Gastrointestinal Hemorrhage

A recent outgrowth of the use of angiography in the diagnosis of gastrointestinal bleeding has been the selective intra-arterial infusion of vasoconstricting drugs to control acute gastrointestinal hemorrhage.

Both pitressin and a combination of epinephrine and propranolol have been used to control arterial hemorrhage, while pitressin has been used to reduce portal venous pressure and thus control variceal bleeding. After the site of bleeding has been demonstrated angiographically, the

vasoconstricting drug is infused selectively into the artery supplying the bleeding point. Repeat angiograms in addition to clinical findings may be used to determine whether the bleeding has ceased. Pitressin has been infused into the superior mesenteric artery for as long as two weeks in the control of variceal hemorrhage.

The results have so far been extremely encouraging and it is hoped that many patients may be spared emergency operation.

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Nusbaum M, Baum S, Kuroda K, et al: Control of portal hypertension by selective mesenteric arterial drug infusion. Arch Surg 97:1005-1013, Dec 1968

Radionuclide Detection of Left-to-Right Cardiac Shunts

Large numbers of children, and occasionally adults, present a diagnostic problem of functional murmur versus congenital heart disease. Often, cardiac catheterization is necessary to make a correct diagnosis. Recently a simple radioisotopic technique has been perfected which enables detection of left-to-right shunts.

The procedure involves an intravenous injection of technetium-99m pertechnetate while imaging with an Anger scintillation camera over the heart and lungs and simultaneously recording the study on magnetic tape. A radionuclide cardiac angiogram is obtained, from which a pulmonary vascular dilution curve of the appearance and disappearance of isotope in the lung can be extracted. The pulmonary vascular dilution curve is analyzed in a specific manner which clearly differentiates the normal curve from one which reflects left-to-right shunting of blood through the lungs. Correlation with cardiac catheterization data has shown this test to be very sensitive to the presence of even very small left-to-right shunts.

This test is being used as a screening procedure for children with heart murmurs of undetermined significance. It appears to be a safe, highly reliable and valuable clinical tool in the evaluation of the pediatric cardiovascular patient.

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Radionuclide Studies as a Guide to Status of the Renal Transplant

There are two basic radioisotopic imaging studies that can be performed to follow the function of the transplanted kidney. They are the radionuclide renal angiogram and the radiohippuran renogram. These tests are also widely used in evaluation of renal function and renal artery stenosis in the general population.

The radionuclide angiogram is performed by intravenous injection of a bolus of technetium-99m pertechnetate and imaging with the scintillation camera over the transplanted kidney. Normally the distal abdominal aorta, the iliac vessels and prompt accumulation of the tracer material in the transplanted kidney are observed, indicating patency of the vascular supply to the transplanted kidney.

The renogram is performed by imaging with the scintillation camera, or a probe placed over the transplanted kidney to record the appearance and excretion of I_{131} labeled hippuran which is injected intravenously. The hippuran is excreted by the renal tubules and, providing there is patent vascular supply to the kidney and no obstruction of urine flow, the appearance and disappearance of tracer in the kidney reflect renal tubular function.

Transplant rejection and acute tubular necrosis both give abnormal results and are often indistinguishable by the hippuran renogram alone. However, the radionuclide angiogram usually continues to indicate adequate renal perfusion in the case of acute tubular necrosis but de-